Application No. 10/594,290

Filed: May 7, 2007

TC Art Unit: 1797

Confirmation No.: 6319

STATUS OF THE CLAIMS

1. (Currently Amended) A lubricative composition for industrial machinery and equipment, said composition comprising a base oil selected from mineral oils, fats and oils, synthetic oils and mixtures of two or more of them, and the following components A₇ and (C):at least one additive selected from the following components (B) to (D);

wherein component (A) is a phosphorus compound comprising (A-1) a phosphorus-containing carboxylic acid and (A-2) a thiophosphoric ester;

wherein component (B) is a dispersant viscosity index improver; wherein component (C) comprises (C-1) and/or (C-2), wherein (C-1) comprises at least one kind of a compound represented by the following formulas (1) to (3):

$$R^{1}-CO-NR^{2}-(CH_{2})_{n}-COOX^{1}$$

$$(1)$$

wherein R^1 is an alkyl group having 6 to 30 carbon atoms or an alkenyl group having 6 to 30 carbon atoms, R^2 is an alkyl group having 1 to 4 carbon atoms, X^1 is hydrogen, an alkyl group having 1 to 30 carbon atoms or an alkenyl group having 1 to 30 carbon atoms, and n is an integer of 1 to 4,

$$[R^{1}-CO-NR^{2}-(CH_{2})_{n}-COO]_{m}Y^{1}$$
 (2)

wherein R^1 is an alkyl group having 6 to 30 carbon atoms or an alkenyl group having 6 to 30 carbon atoms, R^2 is an alkyl group having 1 to 4 carbon atoms, Y^1 is an alkali metal or an alkali earth metal, n is an integer of 1 to 4, and m is 1 when Y^1 is an alkali metal and 2 when Y^1 is an alkali earth metal, and

$$[R^{1}-CO-NR^{2}-(CH_{2})_{n}-COO]_{m}-Z-(OH)_{m}$$
 (3)

wherein R^1 is an alkyl group having 6 to 30 carbon atoms or an alkenyl group having 6 to 30 carbon atoms, R^2 is an alkyl

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group having 1 to 4 carbon atoms, Z is a residue having a hydroxyl group removed from a polyhydric alcohol with two or more valences, m is an integer of 1 or more, m' is an integer of 0 or more, m + m' is a valence number of Z, and n is an integer of 1 to 4,

and wherein (C-2) comprises a compound represented by the following formula (4):

$$R^3$$
-CH₂COOH (4)

wherein R^3 is an alkyl group having 7 to 29 carbon atoms, an alkenyl group having 7 to 29 carbon atoms or a group represented by the formula (5):

$$R^4 - C_6 H_4 O -$$
 (5)

wherein ${\ensuremath{\text{R}}}^4$ is an alkyl group having 1 to 20 carbon atoms or hydrogen; and

wherein component (D) is an ester oiliness improver.

2.-9. (Canceled).

10. (Currently Amended) A lubricative composition for industrial machinery and equipment which comprises a base oil selected from mineral oils, fats and oils, synthetic oils and mixtures of two or more of them; component (C); and at least one additive selected from components (A), (B) and (D);

wherein component (A) comprises (A-1) a phosphorus-containing carboxylic acid or (A-2) a thiophosphoric ester;

wherein component (B) is a dispersant viscosity index improver; wherein component (C) comprises (C-1) and/or (C-2), wherein (C-1) comprises at least one kind of a compound

$$R^{1}-CO-NR^{2}-(CH_{2})_{n}-COOX^{1}$$
 (1)

represented by the following formulas (1) to (3):

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wherein R^1 is an alkyl group having 6 to 30 carbon atoms or an alkenyl group having 6 to 30 carbon atoms, R^2 is an alkyl group having 1 to 4 carbon atoms, X^1 is hydrogen, an alkyl group having 1 to 30 carbon atoms or an alkenyl group having 1 to 30 carbon atoms, and n is an integer of 1 to 4,

$$[R^{1}-CO-NR^{2}-(CH_{2})_{n}-COO]_{m}Y^{1}$$
 (2)

wherein R^1 is an alkyl group having 6 to 30 carbon atoms or an alkenyl group having 6 to 30 carbon atoms, R^2 is an alkyl group having 1 to 4 carbon atoms, Y^1 is an alkali metal or an alkali earth metal, n is an integer of 1 to 4, and m is 1 when Y^1 is an alkali metal and 2 when Y^1 is an alkali earth metal, and

$$[R^{1}-CO-NR^{2}-(CH_{2})_{n}-COO]_{m}-Z-(OH)_{m'}$$
(3)

wherein R^1 is an alkyl group having 6 to 30 carbon atoms or an alkenyl group having 6 to 30 carbon atoms, R^2 is an alkyl group having 1 to 4 carbon atoms, Z is a residue having a hydroxyl group removed from a polyhydric alcohol with two or more valences, m is an integer of 1 or more, m' is an integer of 0 or more, m + m' is a valence number of Z, and n is an integer of 1 to 4,

and wherein component (C-2) comprises a compound represented by the following formula (4):

$$R^3-CH_2COOH (4)$$

wherein ${\bf R}^3$ is an alkenyl group having 7 to 29 carbon atoms or a group represented by the formula (5):

$$R^4 - C_6 H_4 O -$$
 (5)

wherein ${\ensuremath{\text{R}}}^4$ is an alkyl group having 1 to 20 carbon atoms or hydrogen; and

wherein component (D) is an ester oiliness improver which is an ester of a polyhydric alcohol and a fatty acid of monobasic

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acids and is any one selected from the following esters of (D-1) to (D-3):

- (D-1): an ester of a polyhydric alcohol and an unsaturated fatty acid containing a partial ester with the degree of esterification of 1 and a partial ester with the degree of esterification of 2 or more;
- (D-2): a whole ester of a polyhydric alcohol and a mixture of fatty acids, wherein the fatty acids are short-chained fatty acids and long-chained fatty acids; and
- (D-3): an ester of a polyhydric alcohol and a branched saturated fatty acid containing a partial ester with the degree of esterification of 1 and a partial ester with the degree of esterification of 2 or more.

11.-13. (Canceled)

14. (Currently Amended) A lubricative composition for industrial machinery and equipment, the composition consisting essentially of a base oil selected from mineral oils, fats and oils, synthetic oils and mixtures of two or more of them, and component (C), wherein component (C) consists of (C-1) and/or (C-2),

Wherein $\frac{\text{component}}{\text{compound}}$ (C-1) consists of at least one compound represented by the following formulas (1) to (3):

$$R^{1}-CO-NR^{2}-(CH_{2})_{n}-COOX^{1}$$

$$(1)$$

wherein R^1 is an alkyl group having 6 to 30 carbon atoms or an alkenyl group having 6 to 30 carbon atoms, R^2 is an alkyl group having 1 to 4 carbon atoms, X^1 is hydrogen, an alkyl group having 1 to 30 carbon atoms or an alkenyl group having 1 to 30 carbon atoms, and n is an integer of 1 to 4,

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$$[R^{1}-CO-NR^{2}-(CH_{2})_{n}-COO]_{m}Y^{1}$$
 (2)

wherein R^1 is an alkyl group having 6 to 30 carbon atoms or an alkenyl group having 6 to 30 carbon atoms, R^2 is an alkyl group having 1 to 4 carbon atoms, Y^1 is an alkali metal or an alkali earth metal, n is an integer of 1 to 4, and m is 1 when Y^1 is an alkali metal and 2 when Y^1 is an alkali earth metal, and

$$[R^{1}-CO-NR^{2}-(CH_{2})_{n}-COO]_{m}-Z-(OH)_{m'}$$
 (3)

wherein R^1 is an alkyl group having 6 to 30 carbon atoms or an alkenyl group having 6 to 30 carbon atoms, R^2 is an alkyl group having 1 to 4 carbon atoms, Z is a residue having a hydroxyl group removed from a polyhydric alcohol with two or more valences, m is an integer of 1 or more, m' is an integer of 0 or more, m + m' is a valence number of Z, and n is an integer of 1 to 4,

and wherein (C-2) is a compound represented by the following formula (4):

$$R^3$$
-CH₂COOH (4)

wherein R^3 is an alkenyl group having 7 to 29 carbon atoms or a group represented by the formula (5):

$$R^4 - C_6 H_4 O -$$
 (5)

wherein ${\ensuremath{\text{R}}}^4$ is an alkyl group having 1 to 20 carbon atoms or hydrogen.